



Outgoing
M/001/0067

Peter Brinton <peterbrinton@utah.gov>

CS Mining's seed mix

Mike Bradley <mbradley@utah.gov>

Fri, Feb 6, 2015 at 11:50 AM

To: lbuhler <lbuhler@csmining.com>, aswenson <aswenson@csmining.com>

Cc: Peter Brinton <peterbrinton@utah.gov>

Leslie, Alysen,

Peter asked that I follow up on this with a little explanation. Since cost is an issue, I would balance the need for these additional species with the cost and look at replacing existing species in the mixes with these additional ones, if the cost is right.

The BLM mix seems kind of heavy to me, so maybe cutting the grasses at 8lb/acre in half and adding a pound or two of one or two of these additional species would make some sense, as long as the BLM is OK with doing so. When applying seed, it would also be worthwhile to employ some measure to get the seed covered with a thin layer of soil to both assist in germination and give it some protection from wind and opportunistic consumers. This could be as simple as towing a piece of chain link fence over the area behind an ATV after applying the seed (Google images of "flex harrow" to see the concept). You could also use a whirlybird seed applicator attached to an ATV with the "harrow" towed behind it to do the operation in one action. If doing that, the harrow should be at least the radius of the whirlybird spreader pattern behind the unit. You can also buy commercial flex harrows fairly inexpensively.

Let me know if you have any questions, I'll be glad to help.

On Fri, Feb 6, 2015 at 10:49 AM, Mike Bradley <mbradley@utah.gov> wrote:

Leslie,

Alysen asked if I could put together a list of species who's seed has a fairly long viability time. This was kind of difficult to do since that data is not very well documented, at least as far as I could find. Seed viability could be problematic anyway since it would likely be consumed by birds and rodents if left lying around for too long. But, we were able to come up with a few species to add. I'm fine with the species listed and you already have a couple of the species we came up with in these mixes. But these species would be worth adding to them:

Needle and Thread (*Hesperostipa comata*)
Sand dropseed (*Sporobolus cryptandrus*)
Shadscale saltbrush (*Atriplex confertifolia*)
Scarlet globemallow (*Sphaeralcea coccinea*)

Please let me know if you have any questions.

Thanks,

On Fri, Feb 6, 2015 at 10:22 AM, Mike Bradley <mbradley@utah.gov> wrote:

Peter, I was just going over this with Paul, so very timely. I can deal with it, Paul's kind of busy.

On Fri, Feb 6, 2015 at 10:14 AM, Peter Brinton <peterbrinton@utah.gov> wrote:

Hi Mike & Paul,

See the email below from CS Mining. They would like us to re-evaluate the existing seed mixes (included below) in their large mine Notice. Could one or both of you give your input?

Their area is pretty dry. Mike's Google Earth modeled precip layer suggests ~11in to ~13.5in, depending on the area, and elevation ranges from ~5200ft to ~5900ft, with inconsistent precipitation from year to year. For reference, US Gypsum (Sigurd) gets 10 - 12 inches/year, and Brush Beryllium gets 8 - 10 inches/year (based on the Google Earth layer). Both of them get acceptable revegetation.

They don't have extensive experience with revegetation work yet, but haven't had success on what they have done (graded exploration areas and along the roadside). They've had one or two apparent failures. It sounds like halogetan has usually taken over after the first year. However, a little Palmer penstamen, forage kochia, and an unidentified grass (doesn't look like cheatgrass) are coming in on a "test" area largely dominated by halogetan, and it looks like the beneficial species have out-competed halogetan and is keeping it at bay (attached photos). I saw some snakeweed naturally growing on relatively recent disturbances (also attached). Sagebrush and rabbitbrush have re-established on historic dumps and in pits. Rabbitbrush, Indian ricegrass, and shadscale are natives in the area.

Should shadscale be in the mix?

I told them that drill seeding would be more successful where possible. Agreed? Maybe they could drill the terraces of the benched dumps.

I haven't cc'd Lynn. Feel free to pass this on to him if you want.

Peter

----- Forwarded message -----

From: **Leslie Buhler** <lbuhler@csmining.com>

Date: Thu, Feb 5, 2015 at 12:31 PM

Subject: CS Mining's seed mix

To: Peter Brinton <peterbrinton@utah.gov>

Cc: Alysén Swenson <aswenson@csmining.com>, "Ginouves, Edward" <eginouve@blm.gov>

Peter,

Could you please forward this on to Mike Bradley? I must have his email address incorrect.

Hi Mike,

I work with Alysén Swenson to whom you met with last week concerning CS Mining's large mine permit. She has tasked me with providing you with the current seed mixes we use for interim and final reclamation. Please see below:

Final Reclamation Seed Mix

Species	Application Rate (lbs/acre) Pure Live Seed (PLS)
Intermediate Wheatgrass (<i>Elymus hispidus</i>)	2.00
Bottlebrush squirreltail (<i>Elymus elymoides</i>)	0.67
Great Basin Wildrye (<i>Elymus cinereus</i>)	1.34

Indian Ricegrass (<i>Achnatherum hymenoides</i>)	1.34
Yellow Sweet Clover (<i>Melilotus officinalis</i>)	0.67
Hycrest crested wheatgrass (<i>Agropyron cristatum</i> X <i>A. desertorum</i>)	2.00
Palmer Penstemon (<i>Penstemon palmeri</i>)	0.35
Forage Kochia (<i>Kochia prostrata</i>)	0.67
Wyoming Big Sagebrush (<i>Artemisia tridentata</i>)	0.13
Four-Wing Saltbush (<i>Atriplex canescens</i>)	1.34
Rubber Rabbitbrush (<i>Chrysothamnus nauseosus</i>)	0.35
Total all Species PLS	10.86

Interim Seed Mix

-

Species:

Pure Live Seed (lbs/acre):

Hycrest crested wheatgrass	1
Russian wild rye	4
Thickspike wheatgrass	3
Forage kochia	1
Yellow Sweet Clover	0.5

The above seed mixtures are what is approved in our large mine permit. The BLM has developed a seed mix to try and establish some sort of a desired vegetation on a waterline that we put in almost 2 years ago. We just planted this last November so we do not know if this mix is successful yet. Please see below for that seed mix:

BLM Special Project Interim Seed Mix

Species:	Pure Live Seed (lbs/acre):
Crested wheatgrass	8
Russian wildrye	8
Palmer Penstemon	1

When you have a chance could you take a look at these seed mixes and let us know if you feel we should switch things up a bit?

Best Regards,

Leslie Buhler

Land & Permitting Manager

CS Mining, LLC

Milford Ut, 84751

Cell- (435) 630-3829

Office- (435) 387-5053 Ext. 5016

Fax- (435) 387-5088



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